Chapter 5

FOODBORNE ILLNESS COMPLAINT/OUTBREAK ACTIONS

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Introduction
Local boards of health (LBOH) are the primary agencies responsible for investigating foodborne illness complaints implicating foods prepared or sold in food establishments within their jurisdiction. Also among their responsibilities are the investigation of confirmed **or suspected** reports of sick food workers. Foodborne illness complaints should be promptly investigated, preferably within 24-48 hours of being received, to evaluate the need for collecting food samples, to identify and correct poor food handling procedures and to request clinical specimens from food handlers. Certain situations may require an immediate investigation. This chapter addresses how to evaluate and respond to reports of foodborne illnesses and infected food workers and also gives a list of sequential steps to ensure a thorough, efficient investigation.

1) Preparation

Importance of Investigation.
The public relies on health and food regulatory officials, as well as the food industry, for protection from foodborne illness. **The single most important reason to investigate a foodborne illness complaint is to identify contaminated food and remove it from the marketplace to prevent the occurrence of further illness.** Prompt investigations and actions by the LBOH can lead to disease prevention in the community.

Established LBOH Foodborne Illness Policy.
Receiving and investigating foodborne illness complaints is a critical program component in determining the nature of the illness and whether an implicated food might be a causal factor. Local boards of health are responsible for administering their food protection program in accordance with *105 CMR 590.000 - Minimum Sanitation Standards for Food Establishments, Article X*. Failure or inability to investigate valid foodborne illness reports endangers the public health. In such situations, the Massachusetts Department of Public Health is authorized to intervene and take necessary measures to ensure that the

public's health is protected. Every LBOH should have an established policy on how foodborne illness complaints are handled and by whom.

Trained Personnel.
Depending on the nature of the incident, foodborne illness complaints will warrant various degrees of response by the LBOH. A public health professional trained in the investigation of foodborne disease, such as a sanitarian, health agent or public health nurse, should be responsible for *evaluating the validity* of the complaint based on their knowledge of the etiology of foodborne disease, food microbiology and contributing environmental factors relating to food preparation. If the complaint is deemed valid, a follow-up investigation should be initiated in a coordinated fashion. In an outbreak situation, it is important to designate a LBOH contact person to interact with other investigating agencies, the media and the general public.

Supplies.
To conduct a foodborne illness investigation, be prepared with the appropriate supplies. Keep a supply of the following:

- Appropriate paperwork such as *Foodborne Illness Complaint Worksheets* and c*ase report forms.* A copy of these can be obtained by calling the MDPH Division of Epidemiology and Immunization at (617) 983-6800. Other forms can be found in Appendix E.
- Stool specimen collection kits. These are available from the MDPH Enteric Laboratory. See Chapter 6, Section 4-E for more information on obtaining stool kits.
- Food sample containers and inspection equipment such as thermometers, forms and test papers. Information on inspection equipment and supplies can be found in Appendix B.

Communication.
Coordination and communication with other members of the foodborne illness complaint response team (e.g., sanitarian, food inspector, public health nurse, the MDPH) is imperative. Additionally, be sure to keep others not directly involved in an outbreak informed (e.g., other board of health members or health department staff).

2) Receiving and Monitoring Foodborne Illness Complaints

Use the standardized *Foodborne Illness Complaint Worksheet* to record complaint information. This form is explained in Chapter 4, Section 4-A and Section 6-A, and a copy can be obtained by calling the MDPH Division of Epidemiology and Immunization at (617) 983-6800. When possible, speak directly with ill complainants to obtain complete and accurate information. Listen carefully to the complainant. Often you will obtain additional information and details during the re-telling of the complaint.

Obtain a *72-hour or longer* food history to ensure that the suspected food item is the most appropriate to be investigated, based on the diagnosis or symptoms, implicated food vehicle, and onset time. (See Box 4.1, *Guidelines For Determining Suspect Foods* in Chapter 4, Section 3.) A longer food history is necessary when organisms such as hepatitis A, campylobacter and parasites which have incubation periods longer than 72 hours are suspected (see Table 2.3 and Table 2.5 in Chapter 2 for incubation periods). Often, complainants will associate the illness with the last food or meal consumed in a commercial establishment. Although foods prepared in commercial food establishments are implicated in reported outbreaks, foods prepared at home are most often responsible for single cases of foodborne illness and should not be ignored.

Record all single case complaints since the single case may be the first of an outbreak. Record all anonymous complaints that appear to be valid. Complainants often request anonymity for fear of retribution. Some boards of health have different policies on whether or not they will accept anonymous complaints. The MDPH encourages LBOH to accept anonymous complaints since, as stated earlier, the single case may be the first of an outbreak. Immediately record foodborne illness complaints in one logbook or electronic database to help identify a potential outbreak.

NOTE: The importance of documenting single complaints cannot be overstated. An outbreak may not always manifest as an obvious group of ill people. Sporadic cases of diseases may occur when a contaminated food is widely distributed (e.g., chicken with *Salmonella*). This situation can lead to a low attack rate distributed over a large geographic area, so that no one may realize that an outbreak is occurring.

NOTE: If during the completion of a *Bacterial/Parasitic Gastroenteritis Case Report Form* or other *case report form*, it appears possible or likely that food was the source of infection, a *Foodborne Illness Complaint Worksheet* (Section 4-A of Chapter 4) should be started and the appropriate investigations should be initiated as with any other foodborne illness complaint.

3) Criteria to Determine If a Complaint is Valid

Single case complaints should be investigated if there is a possibility that the confirmed diagnosis and/or clinical symptoms are consistent with the foods eaten and the onset time of illness. For example, one person reports having bloody diarrhea three days after eating ground beef which may indicate potential *E. coli* infection. Other factors such as the possibility of sick food handlers and poor food handling/physical facility violations observed by the complainant should also be considered when determining if an investigation is warranted. Failure to respond to a valid single case complaint may result

in additional persons becoming ill if corrective actions are not initiated. If the complaint appears valid, it is the responsibility of the board of health to investigate and make a presumptive determination if the implicated food is the causal factor.

If two or more persons implicate a food, meal or establishment that does not seem to be a likely source but there is **no other shared food history or evident source of exposure**, the LBOH should conduct an environmental investigation. (See Section 4 of this chapter and all of Chapter 7 for more information on environmental investigations.)

In some situations, a follow-up investigation may not be warranted or minimal follow-up may be sufficient if:

1) it is obvious that the symptoms or diagnosis are clearly unrelated to the food which the complainant believes to be causal, and
2) no other information is available (e.g., incomplete food history).

For example:

- An individual with salmonellosis believes the illness was contracted from eggs consumed one-half hour prior to the onset of their symptoms. (The average incubation period for salmonella infection is 12-36 hours.)

- Three family members believe they became ill with cramps and diarrhea from commercially canned cranberry sauce eaten with their home baked stuffed turkey and rice. (Baked stuffed turkey and even rice are potentially hazardous foods which are more likely to be contaminated during home preparation.)

- A complaintant with *Campylobacter* (incubation period is 2-5 days) gives only last meal and is unable to provide complete food history.

Before acting on a suspect foodborne illness complaint, always obtain a complete 72-hour or longer food history to determine if other food may have been the causal factor. Note that there are pathogens which have incubation periods longer than 72 hours. In such circumstances, longer food histories will be necessary. Use the *Guidelines For Determining Suspect Foods* (Chapter 4, Box 4.1) when determining the time length of the food history.

Consumers often focus on foods prepared or eaten at commercial food establishments rather than home-prepared meals. It may be necessary to explain to the complainant the possibility of other exposures, such as home-prepared foods, daycare centers and pet reptiles. It is appropriate, as well as good public health practice, to evaluate and review procedures used in preparing suspect home-cooked food.

If it is determined that an environmental investigation is not warranted, notify (preferably in person) the food establishment that has been implicated in a suspected foodborne

illness complaint. Establish through an interview with the manager, if food handlers have been ill and if the establishment has received any other similar complaints.

Often complainants will call their LBOH implicating food prepared outside of the LBOH jurisdiction. Immediately refer complaints involving food prepared in another jurisdiction to the appropriate local board of health or, if outside Massachusetts, to the MDPH Division of Food and Drugs. The Division of Food and Drugs will investigate foods manufactured in Massachusetts and will forward complaints implicating foods manufactured out of state to the appropriate state or federal regulatory agency.

Another situation in which a follow-up investigation may not be necessary is when repeated complaints are made by the same individual(s) and prior investigation revealed no significant findings. Invalid complaints may be generated by disgruntled employees, competitors, unfriendly neighbors and dissatisfied customers. Whatever the situation, always briefly summarize for the file your reasons why an investigation was not conducted.

NOTE: If uncertain of whether or not to proceed with an investigation, contact the Massachusetts Division of Food and Drugs (617-983- 6712) or the Division of Epidemiology and Immunization (617-983-6800).

4) Expanding the Investigation

If the complaint appears valid, an environmental and/or epidemiological investigation should be initiated within 24-48 hours. The LBOH should have coverage for weekends and holidays in emergency situations.

The Environmental Investigation. This is not a routine inspection but a foodborne illness investigation. The sanitarian or investigator gathers and assimilates facts to find the cause and contributing factors to illness.

Sanitarians play a key role in proving that a food is responsible for illness by making observations and measurements that relate to contamination, survival and growth of the etiologic agent. The environmental investigation should focus on the preparation and service of the implicated food to determine the risk of contamination and temperature abuse. Foods found to be at risk for contamination because of an infected food handler, poor food handling practices or procedures, or an unapproved source (i.e., clams illegally harvested from contaminated beds) should be embargoed. When contamination is blatant, foods should be discarded. An emergency closure or suspension order may be issued by the LBOH when an imminent health hazard exists, such as several infected food handlers or the lack of adequate refrigeration.

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NOTE: See Chapter 7 for detailed information on environmental inspections and enforcement procedures.

The Epidemiologic Investigation. Epidemiologic investigations are usually conducted in outbreak situations. The purpose of the investigation is to identify a problem, collect data, formulate and test hypotheses. It involves the collection and analysis of more facts or data to determine the cause of illness and to implement control measures to prevent additional illness. A questionnaire is often solicited to assist the investigator in developing better hypotheses about the etiologic agent's identity, source and transmission. The investigators interview ill and well persons, and calculate and compare incidence rates of both groups. They make time, place, and person associations and calculate the probability that a food was the responsible vehicle.

The investigator incorporates results from epidemiological associations and the environmental and laboratory investigations, and uses these data in forming and testing hypotheses. Careful development of epidemiologic inferences coupled with persuasive clinical and laboratory evidence will almost always provide convincing evidence of the source and mode of spread of a disease. In situations where food and stool testing are negative, the cause of an outbreak is implicated by epidemiological association.

NOTE: See Chapter 6 for detailed information on the steps in an epidemiologic investigation.

Foodborne Illness in Private Homes. Suspect foods prepared in private homes are sometimes the causative factor in reported illnesses. While it is not within the board of health's authority to conduct an on-site inspection of private homes, the LBOH should try to conduct a HACCP risk assessment based on an interview with the food preparer to identify possible sources of contamination. Often, friends and family are hesitant to participate in an interview or epidemiology questionnaire studies. Encourage participation in an investigation and offer assistance with food and stool specimen testing. Offer advice or educational materials on safe food handling practices and advocate the prevention of further illnesses by ensuring that sick individuals seek medical attention. Additionally, they should be informed of work restrictions associated with certain diseases transmissible through food.

If it appears that a commercially processed food prepared in the home may have been contaminated when the consumer purchased it, obtain product information (e.g., manufacturer name and address, package size and type, code or lot number, expiration dates) and immediately notify the MA Division of Food and Drugs. Try to obtain the suspect food itself, if there are leftovers (see Section 7 of this chapter for more information on collecting leftover food samples).

A press release may need to be issued. Press releases often are issued in hepatitis A incidents and outbreaks if it is determined that exposed patrons and food handlers should receive immune globulin. A press release might also be issued in a large outbreak or serious food-related illness situation to inform the public of recommendations to avoid potential illness. A sample hepatitis A press release can be found in Appendix E.

Results of an investigation, however small or large, should always be documented. Reports may vary in length from one paragraph in a single case incident to several pages for a large outbreak. Examples of summary reports are provided in Chapter 8, Section 4.

NOTE: With certain foodborne illnesses, such as botulism or a chemical poisoning, even one case requires an in-depth epidemiological and environmental investigation.

5) Notifying the Massachusetts Department of Public Health

Immediately report suspected foodborne illness outbreaks and one case of botulism or chemical poisoning to the:

- MDPH Division of Food and Drugs, (617) 983-6712 or
- MDPH Division of Epidemiology and Immunization, (617) 983-6800.

The notification should be **within 24 hours** in accordance with *105 CMR 300.110: Case Reports by Local Board of Health and 105 CMR 300:122: Illness Believed To Be Part Of An Outbreak Or Cluster*.

NOTE: A suspected foodborne disease outbreak is usually defined as: two or more persons experiencing a similar illness, usually gastrointestinal, after ingestion of a common food OR different foods in a common place. An outbreak may also be defined as a situation when the observed number of cases unaccountably exceeds the expected number.

Notifying Others. Maintain a list of people on your board of health and in the local community to contact in an outbreak, including hospitals and emergency rooms. Notifying area health care providers may aid in the identification of related cases.

6) Restricting an Infected Food Worker

Infected food handlers represent a significant contributing factor in foodborne illness outbreaks. Fecal-oral transmission by food handlers is possible since certain pathogens can be shed during and after illness. For example, food workers have been found to be shedding enteric viruses and bacteria weeks after symptoms have ended. Food handlers with infected skin lesions may also be reservoirs of pathogens, such as *Staphylococcus aureus*, which can be transmitted to food when there is direct contact. Refer to Appendix A - Infected Food Handler Policy for detailed information on restrictions.

7) Collecting Leftover Food Samples

Leftover food specimens may hold the clue to the cause of a foodborne illness outbreak. Leftover food samples should be collected in outbreaks and in a timely manner to prevent important evidence from being discarded. However, leftover foods which have been discarded in the garbage or have been out of refrigeration normally should not be collected since the integrity of the food has not been maintained.

Procedures for collecting food samples are outlined in Appendix B. Always notify the Division of Diagnostic Laboratories at the State Laboratory Institute (SLI) at 617-983-6600 prior to collecting and delivering samples in order to review methodology and determine what tests will be conducted on the food.

The general policy of the SLI is only to test food samples implicated in suspected outbreaks. The LBOH may suggest that the holders of food implicated in single case incidents locate a private laboratory which will test the food or to store the food in their freezer for a period of time in case additional reports are received. An exception to this single-case policy is when botulism is suspected. In **all botulism-suspect cases**, it is appropriate to test the suspected food items. Additionally, a single, confirmed case with leftover food consumed with the incubation period, may be considered for testing.

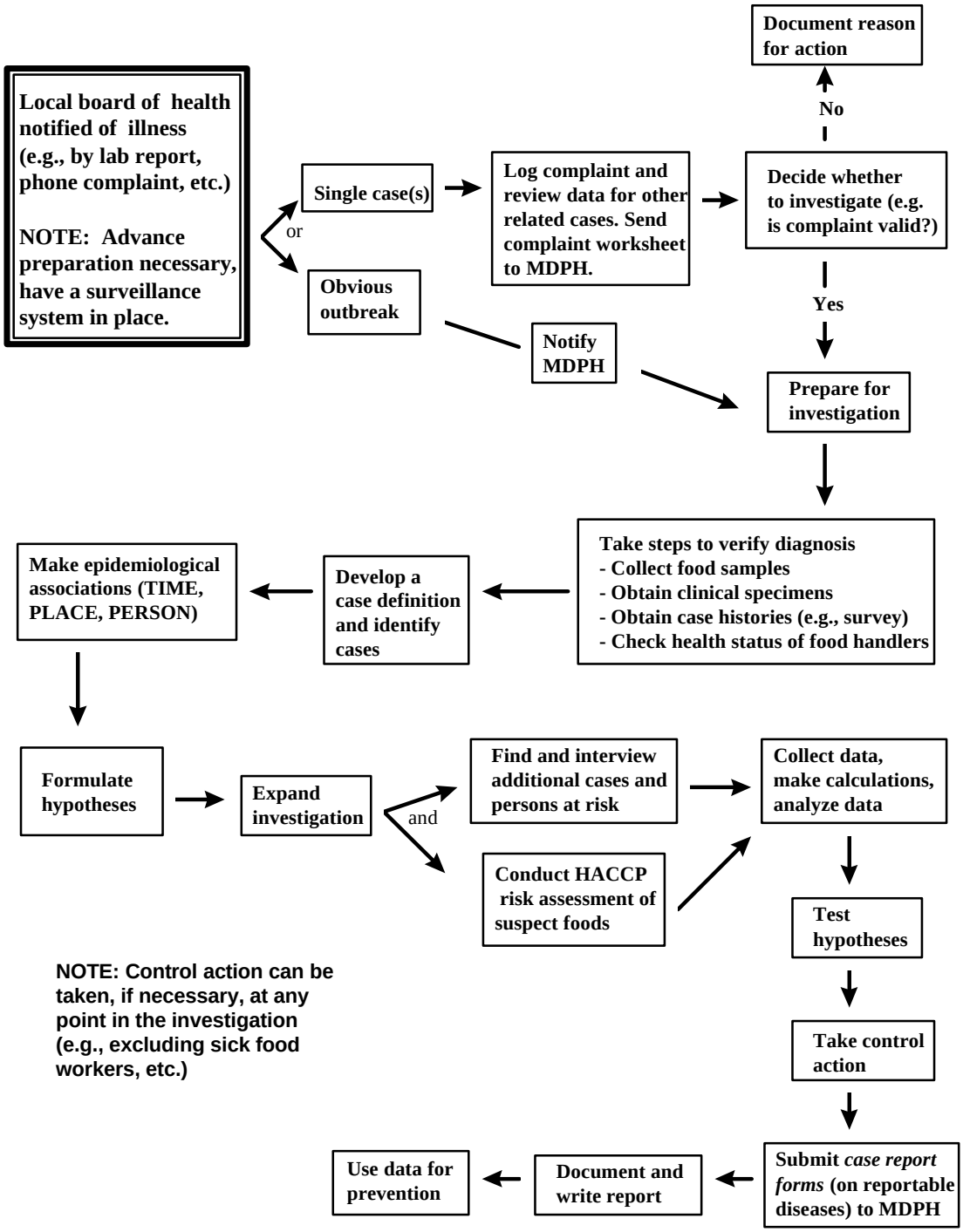
Further information on collecting leftover food samples can be found in Chapter 7, Section 1 and in Appendix B.

NOTE: The following two pages contain summary information on the sequential steps in the investigation of foodborne illness complaints and outbreaks. Both pages contain the same information. For some, it is preferable to follow a list of steps, for others it is preferable to follow a flow chart.

Summary - Sequential Steps in the Investigation of Foodborne Illness Complaints and Outbreaks

Steps	Reference
1) Be prepared. Designate responsible individual(s) trained in foodborne disease prevention and control to evaluate and investigate foodborne illness complaints and outbreaks.	Chapter 5
2) Maintain a foodborne illness surveillance system. This is necessary to determine any changes in the frequency or distribution of cases and permits early identification of outbreaks or potential outbreaks of foodborne illness.	Chapter 4
3) Record complaints on a *Foodborne Illness Complaint Worksheet*. Log all reports in a log book or electronic data system. Send worksheets to the MA Division of Food and Drugs. (Immediately refer complaints of food prepared or manufactured in another jurisdiction to the appropriate LBOH.)	Chapter 4
4) Decide whether to investigate. Is the complaint valid?	Chapter 5
5) Report all clusters or outbreaks to the Massachusetts Division of Food and Drugs (617-983-6712) or the Division of Epidemiology and Immunization (617-983-6800).	Chapter 5
6) Take steps to verify diagnosis.	
• Collect leftover food samples when appropriate from the food establishment and/or complainant in a timely manner.	Appendix B
• Obtain clinical samples when appropriate in a timely manner.	Chapter 6
• Obtain case histories.	Chapter 6
• Immediately investigate reports of suspect sick food workers and exclude if necessary. Request all symptomatic food workers to submit stool specimens. Stool samples should be submitted within 48 hours of your request. In an outbreak situation, request ALL food workers to submit stool specimens, especially when an implicated food is not apparent. Food workers who do not submit stool specimens must be restricted from work until they comply.	Chapter 6 and Appendix A
7) Conduct an environmental investigation within 24 hours. Conduct a Hazard Analysis Critical Control Point (HACCP) risk assessment of the implicated foods as part of your investigation.	Chapter 7
8) Develop a case definition and identify cases. Make epidemiological associations (TIME, PLACE, PERSON). Formulate hypotheses.	Chapter 6
9) If necessary, initiate immediate correction or enforcement actions (embargo, disposal, emergency closure, suspension of operations). Coordinate food recalls and tracebacks with industry and other local, state and federal regulatory agencies. If necessary, issue a press release or public notice.	Chapter 7
10) Expand investigation. Find and interview additional cases and persons at risk. Collect data, make calculations, analyze data. Test hypotheses. Take control action.	Chapter 6
11) Complete and submit *case report forms* (on reportable diseases) to MDPH.	Chapter 4
12) Document all LBOH actions. Submit all reports of your investigation including a copy of the last routine food inspection report for the implicated establishment to the Division of Food and Drugs.	Chapter 8

Summary - Sequential Events in the Investigation of Foodborne Illness Complaints and Outbreaks



Source: Data adapted from Bryan et al, 1987

References

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